WHAT IS CLAIMED IS:

1. A signal converter for converting a digital input signal to an optical modulation signal, comprising:

a Mach-Zehnder type optical modulator to be supplied with the digital input signals controlled in amplitude, and a bias signal for providing the optical modulation signal;

a pilot signal-superimposing circuit for superimposing a pilot signal of a frequency on a bias control signal;

a monitor circuit for providing a monitor signal by receiving a part of the optical modulation signal supplied from the optical modulator;

a first feedback system for providing an amplitude control signal to control an amplitude of the digital input signal in accordance with a frequency deviation signal obtained from the monitor signal; and

a second feedback system for providing the bias control signal to control the bias signal in accordance with a multiplying frequency deviation signal obtained from the monitor signal.

2. The signal converter as defined in claim 1, wherein:

the first feedback system comprises a first mixer for multiplying the pilot signal and the monitor signal; a first low pass filter for providing the frequency deviation signal based on a low frequency component obtained from an output of

the first mixer; and a first differential amplifier for providing the amplitude control signal in accordance with a difference between an output of the first low pass filter and a first reference signal.

3. The signal converter as defined in claim 1, wherein:

the second feedback system comprises a first oscillator for generating a multiplying frequency corresponding to a multiplication of the frequency of the pilot signal; a second mixer for multiplying an output of the first oscillator and the monitor signal; a second low pass filter for providing the multiplying frequency deviation signal based on a low frequency component obtained from an output of the second mixer; and a second differential amplifier for providing the bias control signal in accordance with a difference between an output of the second low pass filter and a second reference signal.

4. The signal converter as defined in claim 2, wherein:

the second feedback system comprises a first oscillator for generating a multiplying frequency corresponding to a multiplication of the frequency of the pilot signal; a second mixer for multiplying an output of the first oscillator and the monitor signal; a second low pass filter for providing the multiplying frequency deviation signal based on a low frequency component obtained from an output of the second mixer; and a second differential amplifier for providing the bias control

signal in accordance with a difference between an output of the second low pass filter and a second reference signal.

5. The signal converter as defined in claim 1, wherein:

the second feedback system comprises a second oscillator for generating the frequency of the pilot signal; a band pass filter for providing a harmonic wave contained in the pilot signal; a third mixer for multiplying the harmonic wave and the monitor signal; a third low pass filter for providing a multiplying frequency deviation signal based on a low frequency component obtained from an output of the third mixer; and a third differential amplifier for providing the bias control signal in accordance with a difference between an output of the third low pass filter and a third reference signal.

6. The signal converter as defined in claim 2, wherein:

the second feedback system comprises a second oscillator for generating the frequency of the pilot signal; a band pass filter for providing a harmonic wave contained in the pilot signal; a third mixer for multiplying the harmonic wave and the monitor signal; a third low pass filter for providing a multiplying frequency deviation signal based on a low frequency component obtained from an output of the third mixer; and a third differential amplifier for providing the bias control signal in accordance with a difference between an output of the third low pass filter and a third reference signal.

7. The signal converter as defined in claim 3, wherein:

the first oscillator generates a twofold frequency of the frequency of the pilot signal.

8. The signal converter as defined in claim 4, wherein:

the first oscillator generates a twofold frequency of the frequency of the pilot signal.